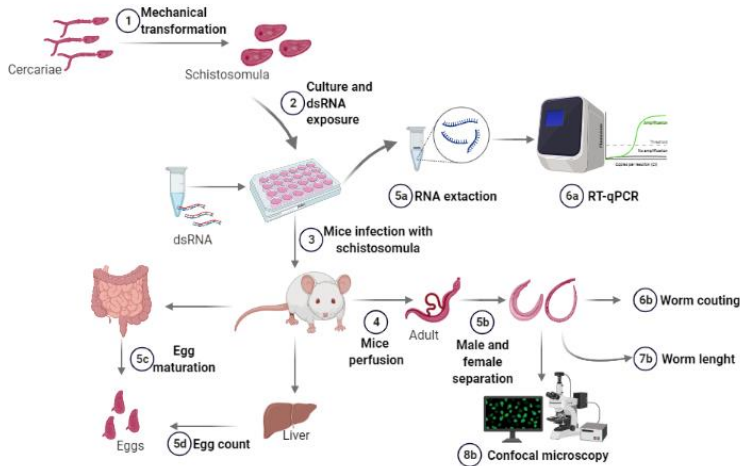


## Introduction

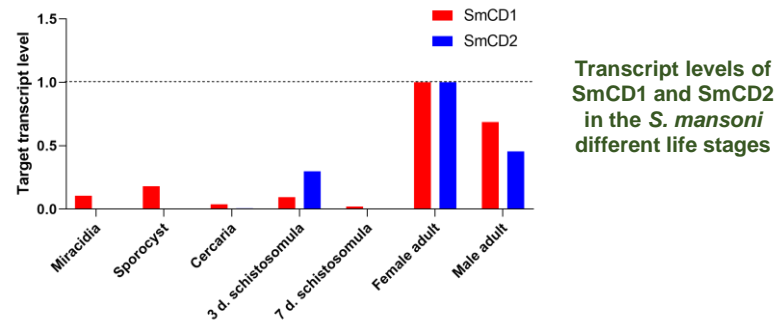
**Aspartyl proteases (APs)** are enzymes of the A1 family that show homology with pepsin and participate in several biological processes. An aspartyl protease (AP) similar to cathepsin D (**SmCD1**) was described in *Schistosoma mansoni*. **SmCD1 is involved in the initial degradation of hemoglobin from host erythrocytes and was validated as a potential therapeutic target by RNA interference (RNAi).** SmCD1 presents 51% sequence identity with the human ortholog. In addition, hemoglobin cleavage sites have been found to be distinct between SmCD1 and its human ortholog, indicating that it is a potential therapeutic target to be validated experimentally. Others *S. mansoni* APs (SmAPs) were identified later, one of them is referred as SmCD2. **This work aims at characterizing the two SmAPs in the different parasite life stages and validating those genes as therapeutic targets.**

## Methods



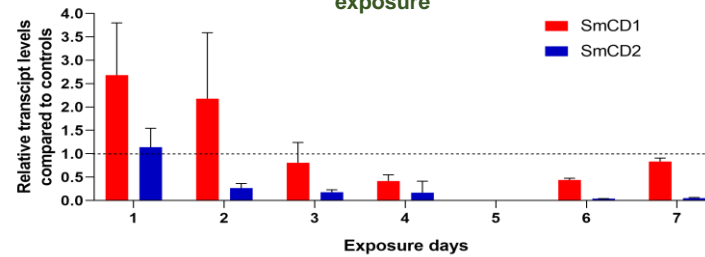
## Support

## Results



Transcript levels of SmCD1 and SmCD2 in the *S. mansoni* different life stages

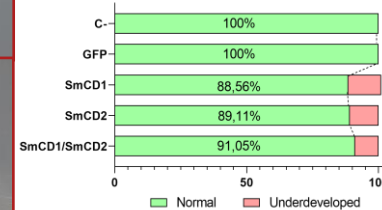
Transcript levels after 7 days of SmCD1- and SmCD2- dsRNAs exposure



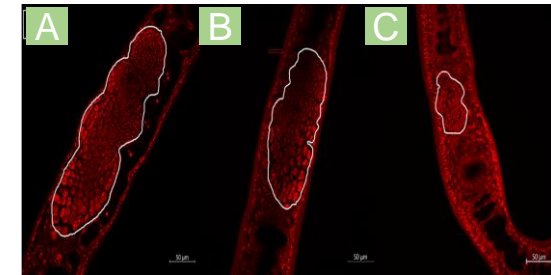
Representative images of ex vivo female worms recovered from mice



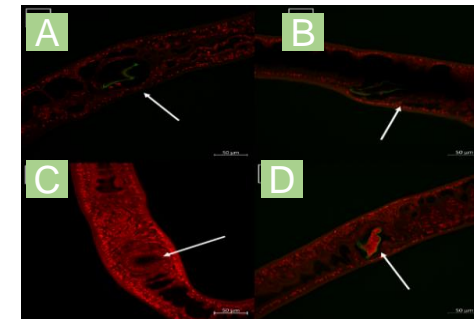
Differential recovery of ex vivo female worms in mice infected with SmCD1 and SmCD2- knockdown schistosomula



Confocal microscopy images showing phenotypic changes in the ovary of ex vivo females recovered from mice infected with knockdown schistosomula



Ovaries of female worms (A) from the negative control group, (B) from nonspecific control group (GFP) and (C), from dsRNA-SmCD2 knockdown parasites. The ovaries are marked by a white line.



Eggs from female worms from: (A) the negative control group, (B) nonspecific control group (GFP), (C) exposed to dsRNA-SmCD2 group with non developed ovary and (D) exposed to dsRNA-SmCD2 with normal phenotype. Eggs are marked by autofluorescence in green and by a white arrows. **We can notice the absence of eggs in the reproductive tract of underdeveloped females exposed to dsRNA-SmCD2 (C).**

## Conclusions

- The parasites knocked down for SmCD1 and SmCD2 presented a 99.9% transcripts reduction on the fifth day after dsRNA exposure.
- SmCD1 and SmCD2 seems to play an essential role in the metabolism of the female worms resulting in underdeveloped parasites.
- SmCD1 and SmCD2 knocked-down female worms presented reduction in the ovary area and absence of eggs in the reproductive tract.
- Further, experimental evidence is required for elucidating SmCD1 and SmCD2 roles and location in the parasite.